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ABSTRACT

This paper discusses the importance and interdependence of effective schools research and practice. The discussion is organized around answering three questions: (1) What problem does research on effective schools propose to solve? (2) What has the research on effective schools taught us and what further research is needed? (3) What factors will facilitate the application of principles based on effective schools research in the schools? By advocating ongoing assessments of effective schools programs, the conclusion supports the application of effective schools theory to help instructional staff evaluate and cope with resource demands imposed by such theory. (JAM)

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Interdependence of Research and Practice:
Effective Schools Research

Division H Fireside Chat
Whitcomb G. Johnstone
AERA Annual Meeting,
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The theme of the AERA annual meeting for 1989 is the "interdependence of research and practice." I think this means that we are particularly concerned in educational research with the application of findings to practice in the classroom, and receive direction for research from the needs of the classroom. I believe that one of the most valuable contributions of educational research is to link psychological and sociological theory with educational practice.

There is a growing need for a scientific discipline that specializes in translating theory and research into practical educational processes: " educational engineering" if you will. The foreword to the *1989 AERA Annual Meeting Program* (AERA, 1989) notes the unprecedented interest of the public in education today. Policy makers, superintendents and citizens want to know "what works" and to put it into practice. Hilgard and Bower, however, make the following observation in discussing the application of learning theory to the classroom:

> *To move from theory to practice is not all that easy. The naive view is that the basic researcher stocks a kind of "medicine cabinet" with aids to solve the problems of the teacher. When a problem arises, the teacher can take a "psychological principle" from the cabinet and apply it like a bandage or an ointment to solve the educational problem. (1975, p. 607)*

Any practice derived from research must work within the context of the schools. There will never be a "medicine cabinet" full of solutions to the practical problems of instruction, and teaching will never be reduced to the act of dispensing "psychological principles." There must be a bridge for translating research-based knowledge into practices. Within the larger educational research community, school district research and evaluation personnel and Division H members in general play an important role by helping to place research-based innovation into the school context. These are the "educational engineers."

The school context includes a structure of interpersonal relations based on custom and policy, and a curriculum set by state law and local board of education policy. It also includes a political and economic climate that plays an important role in determining the feasibility of proposed innovations. Finally, it includes people who must need, understand and apply any procedure research presents to them.

The aspect of need is important. Change is uncomfortable under any circumstances. Schools are appropriately conservative places. Legitimate, necessary change will be facilitated if the people who must make it work understand why it is happening and how it will improve upon current practice. This does not mean that a problem does not exist just because the people in a school do not perceive it. Some problems may only be apparent

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from the outside. But it does mean that the application of research-based ideas and methods must occur in response to real need and have observable effects to gain credibility with practitioners.

I chose *effective schools research* as the topic for discussing the interdependence of research and practice. The effective schools movement has been an important factor in public education in the last decade. There is an extensive literature that ranges from early exploratory research to recent attempts to create effective schools. I know of no other area in which the link between educational research and practice has been more explicit or subject to greater interest. I will organize my comments about effective schools research around three questions that practitioners should ask of any research-based innovation:

1. What problem in the school setting does educational research on this topic propose to solve?

2. What has the research taught us so far, and what further research should be done?

3. What support will the application of research-based principles and techniques from this area require in the schools?

What Problem Does Research on Effective Schools Propose to Solve?

There are many descriptions for what is happening in public elementary and secondary education today, but the one that is most appropriate is *reform*. Educational reform has been the dominant fact of my professional life since 1984. As the Director of Planning and Research in my district I annually review campus plans, administer tests and write evaluation reports required by educational reform legislation.

Educational reform in Texas and many other states has been tied to effective schools research. As conceived in the work of the late Ron Edmonds and his associates, effective schools research was motivated by the finding in many studies of the late 1960's that family background rather than schooling was the chief correlate of students' success in school (Edmonds, 1978). This finding was often misinterpreted to mean that schools made little difference in student outcomes.

Observation and common sense indicated that some schools make a big difference. The basic problem that the early effective schools researchers tried to solve was to objectively identify which schools do make a difference and why.

The early research on effective schools documented organizational characteristics and instructional practices in schools where the distribution of test scores disaggregated by race or SES placed similar proportions of students above minimum levels of curriculum mastery. These schools were mostly urban and mostly poor, in large part because the early research was conducted primarily in large, urban districts. From these studies Edmonds (1982) developed the list of the five "correlates" of effective schools with which we are familiar:

1. Leadership of the principal characterized by substantial attention to the quality of instruction,

2. Pervasive and broadly understood instructional focus,

3. Orderly, safe climate conducive to teaching and learning,

4. Teacher behaviors that convey the expectation that all students are expected to obtain at least minimum mastery, and

5. Use of measures of achievement as the basis for program evaluation.

Edmonds surmised that the conditions of education for the many poor and minority students in the United States could not advance under the presumption that family circumstance could not be overcome. He was not a dispassionate observer. In many ways the motivation for effective schools research was political. In his writing and speaking on the topic of effective schools, Edmonds made it clear that his goal was to promote equity in the schools. The following quotation seems typical of Edmonds' views:

> *Much has been recently made of a perceived decline in the quality of teaching and learning in the public school. This discussion will deal with the issue of educational quality only indirectly. This discussion will directly deal with the circumstances and conditions under which greater proportions of the school age population can be brought to adequate academic mastery. That is so for two reasons. First, evaluative literature demonstrates the consistency with which some schools demonstrate the educability of all the disparate populations now enrolled in the public schools. There are all black schools that demonstrate the educability of black children. There are all poor schools that demonstrate the educability of poor children. (Edmonds, 1982, pp. 1-2)*

The work of Edmonds and many others became the core of what is now called the *effective schools movement*. The principles enumerated above are so apparently clear and so desirable on their face that many school districts and state education agencies have adopted improvement programs based on effective schools research uncritically and with little attention to what is really happening. Frechtling (1987) found that very few schools actually evaluate their effective schools programs.

Research on effective schools is slowing. The number of sessions related to effective schools and school effectiveness at AERA has fallen from 21 last year to 15 this year. Practice lags research, however, and many more school improvement programs based on effective schools research will be undertaken in the near future. Equity in student outcomes, as well as quality, has become an important and somewhat conflicting focus in educational reform.

The poor and minorities still exhibit disproportionately high failure rates on standardized tests. There is a critical need for continuing research on effective schools if we wish to establish equity of outcomes as well as quality of outcomes as a major goal of schooling. It appears, however, that the effective schools movement is in danger of becoming another fading educational fad. This danger is acknowledged by those active in effective schools research. As Edmonds stated in 1982 (p. 15), "We know far more about the correlates of school effectiveness than the means by which they come to characterize a school."

What Has the Research on Effective Schools Taught Us, and What Further Research Should Be Done?

First, the research on effective schools has taught us that schooling makes a difference on student outcomes. Sirotnik (1983) says this was obvious to researchers before and after the Coleman Report (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld and York, 1966). Misinterpretation of the report, however, had laymen, including policy makers and legislators, confused. They thought the report said schooling could not overcome family background to raise student achievement. Beyond the consensus on the importance of school, the effective schools literature has achieved little consensus on exactly what works in what situations, or on how to appropriately measure effectiveness. Finally, there has been very little work linking the concepts of effective schools to other basic domains of educational research such as instructional design theory and student cognitive processing.

The people doing effective schools research believe they know what characteristics to look for in an effective school, but they differ from one another in terms of the number and exact definition of these characteristics. For example, Edmonds (1982) proposed the five characteristics mentioned above. Lezotte and Bancroft (1985) offered seven characteristics of effective schools. Steadman (1987) selectively reviewed the effective schools literature and developed an alternative list of nine "effective practices."

The issue of what makes a school effective becomes more complicated as we move from abstract characteristics to concrete practices. Mackenzie (1983) produced a list of 27 "dimensions of effective schooling" classified under the headings of "leadership," "efficacy," and "efficiency." Within each of these headings, the dimensions were further classified as "core" or "facilitating," although these categories were related more to the frequency with which the dimension appeared in the literature than to a proposed functional relationship.

The efficiency dimensions describe how time is used in the classroom to promote learning. While not usually thought of as part of the effective schools literature, there is an important and extensive body of research on opportunity to learn and academic learning time that has been developing since Carroll framed the initial ideas in 1963 (Carroll, 1989). Sirotnik (1983) points out that opportunity to learn is a complex concept and that different approaches can be effective in different circumstances. For example, cooperative group activity may decrease direct instruction time for some individuals but lead to improved achievement levels for all members of the group.

In a critical review of effective schools research, Rowan, Bossert and Dwyer (1983) point out that,

> *From a scientific standpoint, the research has not tested models of school effects that explain how school-level factors affect the process of teaching and learning that ultimately lead to increased achievement by students. (p. 25)*

Practitioners are busy designing and implementing programs based the characteristics reported in the effective schools literature. Frechtling (1987) notes that in many cases these programs fail to meet expectations for improving student learning. The research on effective schools has come to the point where making substantial further progress in school practice depends on changing the focus from identifying correlates of effectiveness to finding causes.

Steadman (1987) believes that the lack of success districts have had in creating effective schools is due to a general misunderstanding of the characteristics of effective schools. This has lead to a flawed formula for making ineffective schools effective. Brookover (1987) believes the formula, developed in collaboration with effective schools researchers, is an adequate starting point for school programs. The lack of success in changing schools from ineffective to effective is due to inadequate implementation.

Frechtling (1987) found many school improvement programs based on the correlates of effective schools, but few that clearly documented their improvement strategies and fewer that reported systematic collection of data on student achievement. This means that in many cases we cannot learn from the experiences and mistakes of others. Worse, the evidence necessary to distinguish between inadequacies of theory and inadequacies of program implementation is never collected.

Effective schools researchers must begin to think causally and to represent causal thinking and concepts in a formal theory of effective schools. Without such conceptualization we will continue to accumulate facts and cases, unrelated lists of effective school characteristics, and little coherent knowledge for use in application. Practitioners must adopt a more critical attitude toward effective schools research. This is difficult because most of the five or seven characteristics reinforce our common conceptions of what makes a good school.

Practitioners must beware of the contradictions and limits of findings within the effective schools literature. For example, Stringfield and Teddlie (1988) reported that student perceptions were a better measure of school climate than faculty perceptions. Kijai (1988) reported contradictory findings at the same meeting. Buttram and Kruse (1988) noted that the ability to successfully implement an externally developed program based on effective schools characteristics depends partly on the extent that such characteristics are already present in the school.

These findings point out the need for continued investigation of context or interaction effects in effective schools research. The basic issue in this area is whether the characteristics of effective schools are invariant across grade levels, organizational patterns, SES levels of the school population and a host of other "background" variables. Rowan et al (1983) discuss this issue in the context of disentangling the relative importance of different school-level characteristics in causing effectiveness.

Perhaps the most important criticism Rowan et al (1983) level toward effective schools research is the relative neglect of effective classroom practices. Lezotte indicated a similar concern when he added time on task and opportunity to learn to his list of characteristics of effective schools (Lezotte and Bancroft, 1985). Rowan et al (1983) go so far as to suggest that schoolwide emphasis on instructional leadership in the absence of detailed analysis of the instructional process in the classroom is vacuous:

> *School personnel need an adequate understanding of the attributes of effective classroom instruction and specific information on how to manage different types of instructional systems if increased attention to instruction and school leadership are to have important effects on the process of teaching and learning, and ultimately improve student achievement. (p. 30)*

Effective schools research has basically ignored the work on academic learning time (Carroll, 1989), the research on mastery learning and the "2-sigma" problem (Bloom, 1984), instructional design research as illustrated by Gangé (1987), and the work in artificial intelligence exemplified by Anderson and Reiser (1985) or Derry and Hawkes (1987). These and other appropriate threads of research must be integrated with the concepts of effective schools research to provide the details necessary to design working strategies for change in the classroom. Jerome Bruner has noted that, "You cannot improve the state of education without a model of the learner." (Bruner, 1985). The educational engineers interested in creating effective schools should begin to incorporate these threads into their programs. Perhaps in this way practice will come to enlighten research.

What Factors Will Facilitate the Application of Principles Based on Effective Schools Research in the Schools?

At the beginning I mentioned that the successful application of effective schools research in programs of school improvement would depend on three factors: recognition of the need, understanding the concepts, and mechanisms for applying the principles. I will briefly discuss each of these ideas.

Recognition of Need

I think the need for the application of effective schools research is clear from a policy perspective. Ron Edmonds established it eloquently in his writings. The goal is *quality and equity*. He defined equity as equal preparation for success at the next level of education. We tend to view quality and equity as incompatible, but we should not if wish to preserve the uniquely American character of our educational system.

The need for quality is real. We need only read *A Nation at Risk*, or the articles that regularly appear in our newspapers about student ignorance of recent events, history, economics and geography. We need only look at dropout rates for minority students in urban districts or talk to teachers and administrators about drugs and discipline. Quality schools contribute to the economic and social well being of the neighborhood and the overall community.

But, we also need equity. The victims of educational inequity are the members of society who cost the community most in money and in lost opportunity. They make up the majority of the prison population. In hard times they are the most likely to stay in the community to provide in the next generation students. They are also the students most often overlooked and pushed aside in the drive for quality.

The schools do not cause the inequities that exist in education today, but they must deal with them. We need tools for this task and effective schools research offers many such tools. A major contribution of the research has been the renewal of belief in the community that schools do make a difference. A major challenge for the future is to clarify and refine the concepts that have fostered such belief.

The need for programs based on effective schools research may not be as clear at the campus level, at least not to the staff of the school. The characteristics of effective schools strike many in both effective and ineffective schools as simple common sense, and something that is already in place. Frechtling's (1987) review of school-based effective schools programs documents a lack of detailed planning and evaluation associated with

high levels of program failure. The findings of Buttram and Kruse (1988) and others indicate that a single formula for effective schools is unrealistic. The specific details that make an effective inner-city high school are not likely to be the same as those that make an effective suburban elementary school.

Understanding the Concepts

The wide acceptance of effective schools research has been due at least in part to the intuitive appeal of the correlates identified by Edmonds and others. They translate easily into an "action plan" for school improvement. Lawmakers and bureaucrats find the correlates of effective schools understandable. Legislatures and departments of education have adopted laws and rules requiring the implementation of effective schools programs in many states. In my observation, however, this has had little effect on any but the poorest schools and only serves to legitimate current educational practices in the more affluent schools.

As the research designs become more sophisticated and the level of detail in analysis increases, the transition from research to practice must be facilitated. The help may come from the educational engineers in school district research departments, from applied research and development units in universities and regional laboratories, or perhaps from private enterprise. I know of at least one company and many individual consultants who are in business to help school districts implement programs based on effective schools research.

The colleges and universities that prepare teachers have a dual role. Faculty and students should be active in effective schools research, and teachers should be trained in the findings. Inservice education must be developed for teachers in the field. As teacher education programs provide a foundation in the findings of research, new teachers will become a resource for their districts.

The most critical need right now is for research to provide greater detail about the five or seven correlates and how they interact in the school setting to promote effectiveness. Which are most important in the inner city? Which are most critical in the suburban high school? Should we use a group approach to learning these concepts or an individual drill and practice strategy? A lot of questions program designers must ask will go unanswered until effective schools research is linked to other basic research in teaching and learning.

Mechanisms for Application

Obstacles to implementing effective schools that are beyond the control of the local schools must be addressed by the responsible authorities. For example, the maintenance of a safe and orderly environment depends on laws and local policies conducive to good discipline. Less obviously perhaps, well intended but inflexible curriculum reforms at the state or district level may interfere with the creation of optimum learning conditions for some students. Punitive educational reforms do not make a school more effective, they make the ineffective students disappear from the school.

Such interference will grow more apparent as we come to better understand the teaching/learning process as it applies to effective schools. In Texas, school accreditation based on the characteristics of effective schools was implemented at the same time the legal dropout age was lowered and students were required to pass a minimum competency

test for graduation. Even if all the principles of effective schools were understood in detail by the research community, it would be difficult to implement a successful program in the schools.

Part of the task of applying the principles of effective schools research, or any other body of knowledge, in the schools is helping teachers and others in the instructional program cope with the resource demands these ideas carry with them. People must be trained to apply the principles of effective schools at the building and classroom level. Materials that embody these principles must be developed and made available. These should include research-based instructional materials for students, materials to assist teachers and administrators in applying effective schools concepts, and materials for program evaluation keyed to effective schools principles.

Evaluation of effective schools programs is important. It is useful to know whether the new practice works better than the old. We have experienced ten years of program implementation based on effective schools research since the beginning of the "School Improvement Project" in New York in 1979 (Clark and McCarthy, 1983). We have not learned as much as we should from these experiences. Hopefully, in the next ten years we will fully tap the potential of the effective schools movement through a combination of sound basic research, informed program planning and solid program evaluation.

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